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Claims:

- 5 Sub 03 1. A process for stimulating collagen containing structures, the process comprising illuminating a target structure with illuminating radiation causing elevation of the temperature of the target structure, the radiation dosed to the target being controlled to induce an inflammatory response in the target tissue.
- 10 2. A process according to claim 1, wherein the target tissue structure is illuminated directly, without the illuminating radiation passing significantly through extraneous tissue.
- 15 3. A process according to claim 2, wherein tissue extraneous to the target tissue structure is bypassed.
- 20 Sub A1 4. A process according to any preceding claim wherein the illuminating radiation exits illuminating radiation apparatus externally of the body of which the tissue structure forms a part.
- 25 5. A process according to any of claims 1 to 3, wherein the illuminating radiation exits illuminating radiation apparatus internally of the body or organism of which the tissue structure forms a part.
- 30 Sub 03 6. A process according to claim 5, wherein the illuminating radiation exits illuminating radiation

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apparatus internally of the target tissue structure.

5 *Sub #2* A process according to any preceding claim, wherein the absorption of the radiation by the target structure at the predetermined low level controlled dose stimulates collagen regrowth.

10 8. A process according to any preceding claim, wherein the illuminating radiation dose is controlled to ensure that overdosing of the target tissue structure does not take place.

15 9. A process according to any preceding claim, wherein the wavelength of the illuminating radiation is selected such that there is at least some absorption by the target structure or tissue.

20 10. A process according to any preceding claim, wherein the radiation delivered is light, substantially in the wavelength bandwidth 400-1500nm.

25 11. A process according to any preceding claim, wherein the radiation delivered is light, substantially in the wavelength bandwidth 500-1000nm.

30 12. A process according to any preceding claim, wherein the illuminating radiation is of a discrete wavelength or relatively narrow wavelength bandwidth.

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13 A process according to any preceding claim, wherein the illuminating radiation is of a relatively broad band light source filtered to a discrete or relatively narrow wavelength bandwidth.

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14. A process according to any preceding claim, wherein the illuminating radiation is laser radiation.

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15. A process according to any preceding claim, wherein the illuminating radiation is obtained from an LED.

16. A process according to any preceding claim, wherein the illuminating radiation is obtained from a broad band white light source.

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17. A process according to any preceding claim, wherein a body tissue structure is illuminated by means of direct external illumination of the structure.

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18. A process according to any of claims 1 to 11, wherein the illuminating radiation is directed into the body to be delivered to the site of an internal target tissue structure.

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19. A process according to any preceding claim, wherein the energy density of the illuminating radiation delivered to the target structure is substantially in the range 2 to 20Jcm⁻².

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20. A process according to any preceding claim for

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inducing a controlled inflammatory response in one or more of the following collagen containing structures:

bone
5 dentin
cartilage
uterus
large veins and arteries.

10 *Sub 83* 21. Apparatus for use in stimulating collagen containing structures, which apparatus includes:

i) a source of illuminating radiation; and,

15 ii) means for directing the illuminating radiation to a target site.

20 22. Apparatus according to claim 21, wherein the means for directing the illuminating radiation to the target site includes:

(a) focussing means; and/or,

25 (b) an optical delivery line; and,

(c) an emitter portion (comprising the optical delivery line or associated therewith) through which the radiation is emitted in order to illuminate the target structure.

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Sub A3
23. Apparatus according to claim 21 or claim 22, wherein the means for directing the illuminating radiation to the target site is configured to permit manual manipulation enabling the zone of radiation impingement with the target site to be manually altered.

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24. Apparatus according to any of claims 21 to 23, wherein the apparatus is provided with an automated drive arrangement.

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25. Apparatus according to any of claims 21 to 23, including pulsation means for pulsing the illuminating radiation, preferably having a pulse duration substantially in the range 1 microsecond-100ms.

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26. Apparatus according to any of claims 21 to 25, including scanning means for scanning the illuminating radiation over the target tissue structure.

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27. A beam of illuminating radiation having:

Sub B3
25 i) wavelength substantially within the range 400nm to 1100nm and being of a discrete or relatively narrow bandwidth;

ii) an energy density within the beam of 2 to 20Jcm⁻²;

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for use in directly illuminating a target tissue structure wherein tissue extraneous to the target tissue structure is bypassed, the beam producing an illuminating spot size at the tissue substantially in the range 1 to 10mm diameter.